ACRONYMS AND ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
ADT	average daily trips
AEA	Atomic Energy Act
ALARA	as low as reasonably achievable
ANL	Argonne National Laboratory
ANS	Advanced Neutron Source
AOC	area of concern
APS	Advanced Photon Source
ARAP	Aquatic Resource Alteration Permit
ATDD	Atmospheric Turbulence and Diffusion Division
AWQS	Ambient Water Quality Standards
BESAC	Basic Energy Sciences Advisory Committee
BGRR	Brookhaven Graphite Research Reactor
BMAP	Biological Monitoring and Abatement Program
BNL	Brookhaven National Laboratory
BSR	biodiversity significance ranking
CAA	Clean Air Act
CCDTL	coupled-cavity drift-tube linac
CCL	coupled-cavity linac
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHP	Central Heating Plant
CSF	Central Steam Facility
CWA	Clean Water Act
DARHT	Dual Axis Radiographic Hydrodynamic Test
DCG	derived concentration guide
DNA	deoxyribonucleic acid
DOE	U.S. Department of Energy
DOE-AL	U.S. Department of Energy Albuquerque Operations Office
DOE-CH	U.S. Department of Energy Chicago Operations Office
DOE-ORO	U.S. Department of Energy Oak Ridge Operations Office
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
DTL	drift-tube linac
ECL	Environmental Conservation Law
EDE	effective dose equivalent
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESD	Environmental Sciences Division
ETNG	East Tennessee Natural Gas Company

ACRONYMS AND ABBREVIATIONS – Continued

ETTP	East Tennessee Technology Park
FEIS	Final Environmental Impact Statement
FR	*Federal Register*
FY	fiscal year
GWQS	Groundwater Quality Standards
HEBT	high-energy beam transport
HEPA	high-efficiency particulate air (filter)
HFBR	High Flux Beam Reactor
HFIR	High Flux Isotope Reactor
HVAC	heating, ventilation, and air conditioning
ICRP	International Commission on Radiation Protection
IEPA	Illinois Environmental Protection Agency
ILCS	Illinois Compiled Statutes
IPNS	Intense Pulsed Neutron Source
JINS	Joint Institute for Neutron Science
K	hydraulic conductivity
LANL	Los Alamos National Laboratory
LANSCE	Los Alamos Neutron Science Center
LBNL	Lawrence Berkeley National Laboratory
LCF	latent cancer fatality
LEBT	low-energy beam transport
LILCO	Long Island Lighting Company
linac	linear accelerator
LLLW	liquid low-level radioactive waste
LLW	low-level radioactive waste
LMER	Lockheed Martin Energy Research Corporation
LMES	Lockheed Martin Energy Systems
LOS	level of service
MAP	Mitigation Action Plan
MEBT	medium energy beam transport
MEI	maximally exposed individual
MIT	Massachusetts Institute of Technology
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NERP	National Environmental Research Park
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NIOSH	National Institute of Occupational Safety and Health

ACRONYMS AND ABBREVIATIONS – Continued

NIST	National Institute of Standards and Technology
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMEDAQB	New Mexico Environment Department Air Quality Bureau
NMSA	New Mexico Statutes Annotated
NMWQCC	New Mexico Water Quality Control Commission
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NSC	National Safety Council
NSNS	National Spallation Neutron Source
NYSDEC	New York State Department of Environmental Conservation
NYSDWS	New York State Drinking Water Standards
OECD	Organization for Economic Cooperation and Development
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations
ORR	Oak Ridge Reservation
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PGA	peak ground acceleration
PM_{10}	particulate matter (less than 10 microns in diameter)
PSD	prevention of significant deterioration
RCRA	Resource Conservation and Recovery Act
rf	radio-frequency
RfC	reference concentration
RFQ	radio-frequency quadrupole
RHIC	Relativistic Heavy Ion Collider
RLW	radioactive liquid waste
RLWTF	radioactive liquid waste treatment facility
RMO	Reservation Management Organization
ROD	Record of Decision
ROI	region-of-influence
RTBT	ring-to-target beam transport
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Officer
SNL	Sandia National Laboratory
SNS	Spallation Neutron Source
SR	state road
STP	sewage treatment plant
SWEIS	Site-wide Environmental Impact Statement
SWMU	Solid Waste Management Unit

ACRONYMS AND ABBREVIATIONS – Continued

SWTP	Sanitary Wastewater Treatment Plant
TA	Technical Area
T&E	threatened and endangered
TCPs	Traditional Cultural Properties
TCRR	Tennessee Compilation of Rules and Regulations
TDEC	Tennessee Department of Environment and Conservation
TDFCMP	Temperate Deciduous Forest Continuous Monitoring Program
TLV-TWA	threshold limit value—time-weighted average
TSCA	Toxic Substances Control Act
TSD	treatment, storage, or disposal
TVA	Tennessee Valley Authority
USACOE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WAC	waste acceptance criteria
WCRRF	waste characterization, reduction, and repackaging facility

UNITS OF MEASURE

ac	acre
bcf	billion cubic feet
Bq/L	becquerels per liter
Btu/hr	British thermal units per hour
C	celsius
cc	cubic centimeter
cfm	cubic feet per minute
Ci	curie
Ci/g	curies per gram
Ci/ml	curies per milliliter
cm	centimeter
cm/yr	centimeters per year
cm/s	centimeters per second
dB	decibel
dBA	decibel A-weighted
F	fahrenheit
$(fCi)/m^3$	femtocuries per cubic meter
ft	feet
ft/d	feet per day
ft/mi	feet per mile
ft^2	square feet
ft^3	cubic feet
ft^3/hr	cubic feet per hour
ft^3/s	cubic feet per second
g	grams
g/L	grams per liter
gal	gallon
GeV	billion electron volts
gpd	gallons per day
gpm	gallons per minute
gwh	gigawatt hour
ha	hectare
hr	hour
Hz	hertz
in	inch
K	kelvin
keV	thousand electron volts
kg/ft^2	kilograms per square feet
Km	kilometer
km^2	square kilometer
km/hr	kilometers per hour
kPa	kilopascal
kV	kilovolt
L	liter
Lb	pound
lb/ft^2	pounds per square feet
lb/hr	pounds per hour

UNITS OF MEASURE – Continued

lpd	liters per day
lpm	liters per minute
lps	liters per second
m	meter
m^2	square meter
m^2/d	square meters per day
m^3	cubic meter
m^3/yr	cubic meters per year
MA	milliamperes
m/d	meters per day
MeV	million electron volts
mg/L	milligrams per liter
mg/ m^3	milligrams per cubic meter
Mgpd	million gallons per day
mi	mile
mi^2	square mile
min	minute
ml	milliliter
mmhos	micro ohm^{-1}
mph	miles per hour
mrem	millirem (one thousandth of a rem)
mrem/yr	millirems per year
mR/y	millirads per year
m/s	meters per second
m^3/s	cubic meters per second
mSv	milliseivert
MW	megawatt
m/y	meters per year
pCi/g	picocuries (one trillionth of a curie) per gram
pCi/L	picocuries per liter
PCi/m^3	picocuries per cubic meter
Ppm	parts per million
Psig	pounds per square inch guage
R/hr	roentgen per hour
Rad/hr	rads per hour
Rem	roentgen equivalent man
Rem/yr	rems per year
S	second
Tns/yr	tons per year
µCi	microcurie
µg/L	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter
µs	a millionth of a second
yd^3	cubic yards
yr	year

CHEMICALS AND ELEMENTS

Ag	silver
Al	aluminum
Ba	barium
Ca	calcium
Cd	cadmium
Cl	chlorine
CO	carbon monoxide
CO_2	carbon dioxide
Cr	chromium
Cu	copper
D_2O	deuterium
Fe	iron
H	hydrogen
H_20	water
HCl	hydrochloric acid
Hg	mercury
Mg	magnesium
Mn	manganese
Na	sodium
NH_4	ammonium
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NO_3-N	nitrate--nitrogen
O_2	oxygen
P	phosphorus
Pb	lead
SiO_2	quartz
SO_2	sulfur dioxide
SO_4	sulfate
SO_x	oxides of sulfur
Zn	zinc

RADIONUCLIDES

Al-26	aluminum-26	^{26}Al
Am-241	americium-241	^{241}Am
Ar-37	argon-37	^{37}Ar
Ar-39	argon-39	^{39}Ar
Ar-41	argon-41	^{41}Ar
Be-7	beryllium-7	^{7}Be
Be-10	beryllium-10	^{10}Be
C-10	carbon-10	^{10}C
C-11	carbon-11	^{11}C
C-14	carbon-14	^{14}C
Ca-41	calcium-41	^{41}Ca
Cl-36	chlorine-36	^{36}Cl
Co-60	cobalt-60	^{60}Co
Cs-137	cesium-137	^{137}Cs
Fe-55	iron-55	^{55}Fe
H-3	tritium	^{3}H
I-122	iodine-122	^{122}I
I-125	iodine-125	^{125}I
K-40	potassium-40	^{40}K
Mn-53	manganese-53	^{53}Mn
Mn-54	manganese-54	^{54}Mn
N-13	nitrogen-13	^{13}N
N-15	nitrogen-15	^{15}N
Na-22	sodium-22	^{22}Na
O-14	oxygen-14	^{14}O
O-15	oxygen-15	^{15}O
Pu-238	plutonium-238	^{238}Pu
Pu-239	plutonium-239	^{239}Pu
Pu-240	plutonium-240	^{240}Pu
Pu-249	plutonium-249	^{249}Pu
Sr-89	strontium-89	^{89}Sr
Sr-90	strontium-90	^{90}Sr
Tc-99	technetium-99	^{99}TC
Te-123m	tellurium-123m	^{123m}Te
U-234	uranium-234	^{234}U
U-235	uranium-235	^{235}U
U-238	uranium-238	^{238}U
Xe-127	xenon-127	^{127}Xe

METRIC CONVERSION CHART

To Convert into Metric			To Convert out of Metric		
If You Know	**Multiply By**	**To Get**	**If You Know**	**Multiply By**	**To Get**
Length					
inches	2.54	centimeters	centimeters	0.3937	inches
feet	30.48	centimeters	centimeters	0.0328	feet
feet	0.3048	meters	meters	3.281	feet
yards	0.9144	meters	meters	1.0936	yards
miles	1.60934	kilometers	kilometers	0.6214	miles
Area					
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092903	square meters	square meters	10.7639	square feet
square yards	0.8361	square meters	square meters	1.196	square yards
acres	0.40469	hectares	hectares	2.471	acres
square miles	2.58999	square kilometers	square kilometers	0.3861	square miles
Volume					
fluid ounces	29.574	milliliters	milliliters	0.0338	fluid ounces
gallons	3.7854	liters	liters	0.26417	gallons
cubic feet	0.028317	cubic meters	cubic meters	35.315	cubic feet
cubic yards	0.76455	cubic meters	cubic meters	1.308	cubic yards
Weight					
ounces	28.3495	grams	grams	0.03527	ounces
pounds	0.45360	kilograms	kilograms	2.2046	pounds
short tons	0.90718	metric tons	metric tons	1.1023	short tons
Temperature					
fahrenheit	Subtract 32 then multiply by 5/9ths	celsius	celsius	Multiply by 9/5ths, then add 32	fahrenheit

METRIC PREFIXES

Prefix	Symbol	Multiplication Factor
Exa-	E	1 000 000 000 000 000 000 = 10^{18}
Peta-	P	1 000 000 000 000 000 = 10^{15}
Tera-	T	1 000 000 000 000 = 10^{12}
Giga-	G	1 000 000 000 = 10^{9}
Mega-	M	1 000 000 = 10^{6}
Kilo-	K	1 000 = 10^{3}
Hecto-	H	100 = 10^{2}
Deca-	Da	10 = 10^{1}
Deci-	D	0.1 = 10^{-1}
Centi-	C	0.01 = 10^{-2}
Milli-	M	0.001 = 10^{-3}
Micro-	μ	0.000 001 = 10^{-6}
Nano-	N	0.000 000 001 = 10^{-9}
Pico-	P	0.000 000 000 001 = 10^{-12}
Femto-	F	0.000 000 000 000 001 = 10^{-15}
Atto-	A	0.000 000 000 000 000 001 = 10^{-18}

RADIOACTIVITY UNITS

Part of this report deals with levels of radioactivity that might be found in various environmental media. Radioactivity is a property; the amount of a radioactive material is usually expressed as "activity" in curies (Ci). The curie is the basic unit used to describe the amount of substance present, and concentrations are generally expressed in terms of curies per unit mass or volume. One curie is equivalent to 37 billion disintegrations per second or is a quantity of any radionuclide that decays at the rate of 37 billion disintegrations per second. Disintegrations generally include emissions of alpha or beta particles, gamma radiation, or combinations of these.

RADIATION DOSE UNITS

The amount of ionizing radiation energy received by a living organism is expressed in terms of radiation dose. Radiation dose in this report is usually written in terms of effective dose equivalent and reported numerically in units of rem. Rem is a term that relates ionizing radiation and biological effect or risk. A dose of 1 millirem (0.001 rem) has a biological effect similar to the dose received from about a 1-day exposure to natural background radiation. A list of the radionuclides discussed in this document and their half-lives is included in Appendix F.